RESPONSIBLE PURCHASING **GUIDE**

computers

RPN

Responsible Purchasing Network

Center for a New American Dream

About the Guide

The Responsible Purchasing Guide for Computers is published by the Responsible Purchasing Network in print, as a PDF file, and on the web. Print and PDF copies are available to the public for purchase. The online edition includes additional resources available to members of the Responsible Purchasing Network, including: searchable product listings, multiple policy and specification samples, comparisons of standards, and related documents. Visit www.ResponsiblePurchasing.org to purchase a copy or to access the members-only web-based edition of the Guide.

About the Responsible Purchasing Network

The Responsible Purchasing Network (RPN) was founded in 2005 as the first national network of procurement-related professionals dedicated to socially and environmentally responsible purchasing.

RPN is a program of the Center for a New American Dream (www.newdream.org) and guided by a volunteer Steering Committee of leading procurement stakeholders from government, industry, educational institutions, standards setting organizations, and non-profit advocacy organizations.

Acknowledgements

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Overview

Social and Environmental Issues

Institutional buyers spend billions of dollars on electronic equipment each year. With the rapid pace of innovation, the organizational lifespan of a computer has decreased to two years and users often feel it is easier to buy new equipment than to upgrade the products they have (SVTC, 2004). Production and use of an ever increasing number of electronic products is resource-intensive, accounting for significant extraction of natural resources and major energy consumption as well as billions of gallons of water use. When computers and other electronics are disposed, the resulting waste stream contains toxic materials such as lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBBs), and polybrominated diphenyl ethers (PBDEs). The United Nations Environmental Program (UNEP) estimates that almost 50 metric tonnes (55 US tons) of "e-waste" are disposed annually worldwide (BBC, 2006). Unscrupulous recycling companies ship e-waste containing toxic materials to developing countries, where it is often processed by workers with few or no protections or environmental controls.

Best Practices

Responsible computer purchasing and management programs should consider manufacturing, use-phase and disposal impacts as well as price and performance. A diverse team of stakeholders, including IT and Purchasing staff, waste management personnel, sustainability/environmental staff and end-users, should be involved in establishing baseline inventory and impact data; exploring product options; and jointly setting environmental, performance, and pricing goals. In addition this group can develop an electronics purchasing and management policy; review existing specifications; and train users on any needed behavioral changes. This Guide includes a variety of sample policies and specifications for responsible computer procurement.

Standards

The major barrier to specifying environmentally preferable computers has been the difficulty of assessing complex data on multiple dimensions of product content and performance. The recent development of the Electronic Product Environmental Assessment Tool (EPEAT) has changed that – making it easy for purchasers to evaluate, compare, and select desktop computers, notebooks, and monitors based on their environmental attributes. EPEAT addresses the reduction and elimination of environmentally sensitive materials, materials selection, design for end-of-life, product longevity/life cycle extension, energy conservation, end-of-life management, corporate performance, and packaging. The certification includes three increasingly stringent tiers of environmental performance: Bronze, Silver and Gold. The Energy Star standard for energy efficient computers, administered by the US Environmental Protection Agency (EPA) and Department of Energy (DOE), is a required criterion in the EPEAT computer standard.

Cost, Quality, and Supply

Manufacturers have adjusted design and production to ensure that many of their new products conform to or exceed EPEAT and Energy Star requirements. The costs of EPEAT registered and Energy Star-compliant products are competitive with unregistered products. As of September 2007, over 600 computer products were registered at EPEAT Bronze, Silver and Gold levels. More than US $50b in federal agency contracts already reference EPEAT, and the January 2007 White House Executive Order 13423 requires all federal

purchasers to employ EPEAT in their contracting. Most registered products meet the Bronze or Silver requirements; in June 2007 the first Gold products were registered.

Conclusion

The growing use of environmentally preferable computer products helps to reduce negative human and environmental impacts. Reduction in toxic substances lessens worker safety and ecological impacts. Improved energy efficiency reduces greenhouse gas emissions linked to climate change and air pollution; refurbishment and upgrade options can reduce disposal impacts. And as demand for environmentally preferable electronics continues to grow, product selection and features will expand, allowing purchasers to source the full range of needed products while reducing environmental impact.

Social & Environmental Issues

Institutional buyers are increasingly concerned about the social and environmental effects of electronics throughout their lifecycle. These include energy consumption, use and disposal of hazardous substances, waste impacts and worker and community exposures. To address these concerns, institutions are incorporating social and environmental considerations into their assessment of manufacturers' products and practices.

Energy

Computers and office equipment in the US consume 74 billion kWh of electricity per year, equivalent to the annual electricity consumption of 7 million households (PSI, 2003). According to the EPA, more than 11 billion kWh, the equivalent of $935 million, could be saved each year if users of the 55 million office computers in the U.S. used the power management features on their computers effectively.

Computers are often left on while not in use, even overnight, unnecessarily consuming energy and costing money. Monitors and CPUs can be set to enter an energy-saving "sleep" mode after a defined period of inactivity, allowing them to remain on, but inactive, reducing power consumption and heat generation and then returning to active or "on" mode when they are used again Products that meet Energy Star's newest computer standard, version 4.0, not only include these power management features but also use less power than other models to perform active computing tasks. However, many users are unfamiliar or uncomfortable with energy management programs and do not make effective use of them.

Carbon dioxide (CO_2) and other greenhouse gas emissions result when fossil fuels are burned to produce electricity. Energy efficiency reduces the need for power generation and thus the emissions related to it, helping stem the tide of global warming. EPA estimated that if all users employed Energy Star 3.0 power management features the potential carbon dioxide reductions would be the equivalent of taking 1.5 million cars off the road or planting 2.5 million acres of trees (EPA, 2006e). Energy and CO_2 reductions related to Energy Star 4.0 could be even greater.

Hazardous Substances

One six-inch silicon wafer requires 20 pounds of chemicals, 22 cubic feet of hazardous gases, and 2,275 gallons of water for its production, and generates 7 gallons of hazardous waste (Flynn, 2003). In addition, 40 percent of lead and 70 percent of other toxic substances found in landfills, including mercury, cadmium and polybrominated flame retardants, are from discarded computers and other electronic wastes (NJIT 1997; EPA R9 2001).

Computer manufacturing can expose workers to hazardous substances and release them into the environment, where they can affect the health of humans and wildlife. In recent years, workers have filed lawsuits against computer manufacturers such as IBM, asserting that exposure to chemicals resulted in high cancer rates and birth defects among workers and their children (Clapp, 2006). The hazardous substances present in computers can also escape into air, water, and soil when landfilled or incinerated (Armour, 2003).

Hazardous substances used in computers include:

▸ **Cadmium** -- used in batteries, surface mount device (SMD), chip resistors, infrared detectors, semiconductors, and older cathode ray tubes (CRTs). Approximately 2

million pounds of cadmium are present in the 315 million computers that became obsolete between 1997 and 2004. Cadmium exposure can cause brittle bones, lung damage, and kidney disease (PSI, 2003), and is characterized by IARC as a Group 1 (known) carcinogen (IARC,1997).

▸ **Lead** -- most commonly used in solder and CRT glass for radiation shielding. Lead bioaccumulates in living organisms and can cause chronic damage to the nervous system, reproductive system, and kidneys. Lead can also cause blood disorders, and affects the mental development and growth of children (PSI, 2003).

▸ **Mercury** -- used in LCD and flat panel displays, switches, printed wiring boards, and batteries. Electronics account for 22 percent of the world's annual consumption of mercury. Exposure to high levels of mercury can cause chronic brain and kidney damage. Pregnant women are especially advised to monitor their potential mercury exposure because mercury can cross the placental barrier and harm the developing fetus at levels not known to affect the mother (PSI, 2003).

▸ **Polyvinyl Chloride (PVC)** -- one of the various plastic resins contained in computers. PVC is used in computer housings and coated wire and cable. It is difficult to recycle, often contains toxic heavy metal stabilizers and phthalate plasticizers, and releases dioxins and furans during its production and incineration. Dioxins are persistent, bioaccumulative and carcinogenic; exposure is associated with immune and reproductive system disorders, liver disease, thyroid dysfunction, lipid disorders, neurotoxicity, cardiovascular disease, and metabolic disorders, such as diabetes. (NAS, 2007).

▸ **Brominated Flame Retardants** -- used in computer plastics, circuit boards, cables, and connectors to reduce the risk of fire. Studies show that brominated flame retardants such as polybrominated biphenyls (PBBs) and polybrominated diphenylethers (PBDEs) may be endocrine disruptors. Additionally, PBDEs could result in neurotoxic effects and reduce levels of thyroxin, a hormone that regulates development (PSI, 2003).

▸ **Hexavalent Chromium** -- used to protect untreated and galvanized steel from corrosion and to harden steel housings. Even in small concentrations, hexavalent chromium can cause strong allergic reactions such as asthmatic bronchitis and DNA damage. Hexavalent Chromium is listed by IARC as a Group 1 (known) carcinogen. The 315 million computers that became obsolete between 1997 and 2004 contained approximately 1.2 million pounds of hexavalent chromium (SVTC, 2004).

Social Responsibility
To recapture and reuse their material content, obsolete computers should be reused or recycled to the greatest extent possible. In recent years, only a small portion of the US electronic waste stream -- 10-15% prior to 2003 -- has been recycled but the proportion of computers recycled is growing due to an increase in landfill bans and recycling programs, and increasing value for materials - reaching approximately 20-25% in recent years (EPA 2007b). Unfortunately, some 60% - 75% of the electronic products collected for recycling in the US in recent years have been exported to developing countries such as China, India, and Pakistan, where weak environmental and worker safety laws often exacerbate the environmental and human health problems associated with computer disposal. (EPA 2007a) The worker safety and environmental impact of overseas disassembly of computer parts is

well documented -- wires burned over open fires to recover copper, open acid baths used to separate precious metals, workers with no safety equipment, and heaps of discarded materials burned or left to release their contents to the environment (GAO, 2005). The greater part of exported e-waste originates in the U.S. and is sent to developing countries. Disassembly of nonworking computers in developed countries where they are generated, with appropriate worker controls and technologically advanced methods would decrease the negative human health and environmental impacts in the developing world (GAO, 2005).

End-of-Life Management
In addition to the environmental and human health concerns associated with electronic waste, its disposal can prove burdensome and expensive. In 2005 the United Nations Environment Program gave an estimate of 20 to 50 million tons of general E-Waste being generated every year world wide (UNEP). Surveys conducted by Stanford Research Institute in 2006 estimated that approximately 41 million computers per year would become obsolete between 1997 and 2007. One estimate puts the cost of proper handling and disposal of these materials at more than $10.7 billion (SVTC, 2004). If manufacturers do not participate in e-waste recycling, state and local governments and private companies will bear much of this financial burden.

Some US states have taken measures to address the potential environmental and financial problems associated with the disposal of electronic waste. California, Maine, New Hampshire, Massachusetts, Minnesota and Rhode Island, for example, have enacted bans on landfill disposal of CRTs.

Other government initiatives have directly addressed funding and organization of e-waste recycling. Japan's 2001 Appliance Recycling Law requires manufacturers to take back and recycle certain products, including computers. The European Union (EU) Waste Electrical and Electronic Equipment (WEEE) directive, adopted in 2003, requires manufacturers to accept and recycle used electronic products from private households and mandated that an annual collection rate of at least 4 kg (8.8 lbs) per person be achieved by December 31, 2006. The EU's Reduction of Hazardous Substances (RoHS) directive requires all new electronic equipment sold in the EU as of July 1, 2006, to eliminate lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBBs), or polybrominated diphenyl ethers (PBDEs), with certain restricted exceptions (EU Official Journal).

Related Documents (click to download)
Poison PCs and Toxic TVs Report, Silicon Valley Toxics Coalition, 2004

Purchasing Environmentally Preferable Computers: A Guide for Government Procurement Officials, Product Stewardship Institute

Exporting Harm: The High-Tech Trashing of Asia

Best Practices

To address the environmental and human health concerns associated with computer manufacturing, use, and disposal, institutions must purchase new environmentally-friendly computers that are easily upgradeable and designed for reuse or recycling, in addition to finding ways to manage obsolete computers safely at end-of-life. By purchasing computers that incorporate fewer toxic elements and are designed to be long-lasting and recyclable, institutions can reduce the amount and toxicity of electronic waste destined for landfills and incinerators. By also procuring end-of-life services – refurbishment, recycling, donation – from environmentally and socially responsible companies whose practices are transparent and who do not ship toxic materials to be processed in substandard conditions abroad, purchasers can support development of an environmentally sound recycling infrastructure.

Form a Stakeholder Team

Assemble a team dedicated to work on improving computer purchasing and management. The team should include a range of stakeholders, including IT and Purchasing staff, a representative from management, environmental or waste management staff, and end-users. Together, the team should implement decisions regarding the use and procurement of computers and end-of-life services, and develop a plan for moving forward and measuring results.

Baseline Inventory and Impact

Use the Electronics Environmental Benefits Calculator to evaluate the impact of switching to EPEAT registered computer products. Compile current inventory as a baseline for comparison against future purchasing. Calculate impacts from current inventory, such as energy use, average lifespan, and disposal destination.

Evaluate future computer needs to determine whether efficiencies can be achieved by allocating computer products in ways that better match your organization's computing needs and reduce over-purchasing. Ensure that existing computers are being used to their fullest capacity, and look for opportunities to consolidate and reduce the amount of equipment being operated. For example, thin client systems can reduce the need for individual computers, telecommuters might share in-office computers, or laptops can be shared between several employees whose needs are occasional.

Set Goals

Based on baseline data, set realistic, measurable goals for reducing the negative social and environmental impacts related to computer usage. Goals should be ambitious but practical. For example, aim for buying all EPEAT registered computers and moving up the tiers over time, from Bronze to Silver to Gold. Establish a goal of recycling all computers at end-of-life, aim to reduce energy consumption from office electronics by 30 percent, or set a goal of procuring a specific percentage of new computers with the EPEAT Silver ranking by a certain date. Identify strategies for meeting these goals. For example, decrease electricity use by enabling Energy Star power management features and ensuring that employees turn off computers when the office is empty; find a local computer take-back program to dispose of obsolete computers; or increase product lifespan by adding memory or processor speed instead of replacing old machines.

Adopt a Policy

Consider adopting a policy to formalize your institution's commitment to purchasing computers, monitors and end-of-life management services that minimize negative impacts on human health and the environment. For examples, see the Policies section in this Guide.

Evaluate Standards and Specifications
Don't start from scratch when drafting bid specifications that address your social and environmental priorities. Evaluate existing standards and specifications used by other institutions for purchasing responsible computers and office electronics. Many times a third party standard or another institution's specification language will meet your needs with minimal changes. For more information, see the Specifications section in this Guide.

Improve Practices
Buying computers with improved environmental performance is an important step, but some environmental features, such as energy efficiency and paper reduction, depend on end users to employ these features effectively. Below are some ways users can minimize the environmental impacts of their computers:

▸ Power management features must be activated in order to obtain the benefits. Ask vendors to activate Energy Star power management features before delivery and to provide user manuals and/or technical support to ensure that these energy-saving benefits will be maximized.

▸ Train employees about the environmental features on their computers and monitors, and why these features are important, so they do not disable them.

▸ Turn off computers and monitors at night and on weekends to save energy and prolong their useful life. Turning off computers not only saves energy and reduces electricity costs, but also extends the life of the product.

▸ Set imaging devices (printers, scanners, multifunction devices) to duplex printing to improve paper efficiency by up to 40 percent. Encourage electronic circulation of drafts, memos, newsletters and other short-lived documents.

Measure Progress
Schedule regular assessments in order to measure program progress. Require vendors to report on all contract purchases and their compliance with your goals on a regular basis. Check to see if predetermined benchmarks are being achieved. Reward or recognize the stakeholders responsible for achieving success. Publicize your commitments and successes to your community. If necessary, identify and address any obstacles that may be limiting the program's success and adjust goals if necessary.

Cost, Quality, Supply

In general, environmentally preferable computers and monitors are comparable to conventional models in cost, quality, and supply.

Cost

Energy Star equipment is up to 60% more efficient than models without energy management controls, thereby decreasing energy costs and prolonging equipment life. The energy savings related to Energy Star significantly reduce the lifetime energy costs of the product compared to conventional computers.

According to sources at several of the leading computer manufacturers, EPEAT-rated products will not cost any more than other similar products (NRC, 2006). As of December 2007, EPEAT registered computers carry no price premium compared to conventional models.

Quality

EPEAT registration addresses environmental performance attributes not performance criteria such as memory size or processor speed. An EPEAT registered computer is no more or less likely to have adequate storage or processing speed for specific usage than a non-EPEAT registered computer. Therefore, purchasers should specify their desired processing and storage needs for EPEAT registered products according to the same criteria and user requirements as they would non-EPEAT registered products.

The newest Energy Star computer standard – Energy Star 4.0, which took effect in July 2007 – addresses active phase computing, as well as the standby, sleep and hibernation modes addressed by the Energy Star 3.0. For this reason, compliance with Energy Star 4.0 may be affected by specific changes to the standard configuration of a computer model – e.g. the addition of more video capability or faster processing speeds. Make sure to work with your supplier at the time of purchase to ensure you obtain an Energy Star 4.0-compliant model.

Supply

Energy Star compliant and EPEAT registered computer products are widely available from conventional suppliers. As of September 2007, there were over 600 EPEAT registered products (EPEAT, 2006c).

As of September 25, 2006, 5,940 different computers, including desktops and laptops, and 609 monitors available worldwide had attained Energy Star 3.0 compliance (ES, 2006). The new Energy Star 4.0 standard was announced on July 20, 2007 and by November 28, 2007, computer models already met the stringent new requirements (ES 2007). New business model computers are being designed to comply with Energy Star 4.0 because many institutional purchasers require Energy Star compliance.

Policies

Educational institutions, cities, states, counties, and an increasing number of other organizations have already adopted purchasing policies for computers and monitors, typically addressing energy use, recycled content, end-of-life management, and reduction of hazardous content.

Model Policy

RPN, Model Environmentally Responsible Electronic Product Policy, 2007
(See Addendum I)
Developed by RPN, this model policy commits an institution to purchasing environmentally preferable computers and other electronics, implementing energy saving strategies during their use phase, extending their lifecycle, and ensuring that they are responsibly handled at end-of-life.

More Sample Policies

Federal

The White House, Executive Order 13423, January 2007
Strengthening Federal Environmental, Energy, and Transportation Management requires that federal agencies "when acquiring an electronic product to meet [agency] requirements, meet at least 95 percent of those requirements with an Electronic Product Environmental Assessment Tool (EPEAT)-registered electronic product." Also requires agencies to select Energy Star registered products.

State

California, CIWMB Resolution 2005-164, 2005
As an addendum to the California Electronic Waste Recycling Act of 2003, the Electronic Product Environmental Assessment Tool (EPEAT) rating system was adopted as the primary environmental purchasing tool to be used by state agencies to identify electronic devices with reduced environmental impacts.

Educational Institutions

Cornell University, Computer and Network Support Green Purchasing, 2006
As part of their sustainable computing initiatives, CNS will only purchase Energy Star compliant, EPEAT products.

University of California Policy Guidelines for Sustainable Practices, 2007
Covers policies, implementation procedures and best practices for the University system's sustainability initiatives, including requirements to purchase only EPEAT registered computers and reduce hazardous electronic waste.

Specifications

The most important environmental standard to reference in any computer purchasing policy is the EPA-funded Electronic Product Environmental Assessment Tool (EPEAT). See the Standards section of this Guide for additional detail on EPEAT. Below is a model specification for computers using the EPEAT standard as a foundation.

Model Specs (See Addendums II-IV)
Green Electronics Council, EPEAT Recommended Contract Language, 2006
Includes reporting requirements which allow purchasers to quantify the benefit of their purchases. Because EPEAT requires Energy Star conformance, this language also addresses energy efficiency. See Addendum II.

Social Justice Clause, Responsible Purchasing Network, 2006
In addition to specifying EPEAT-registered products, purchasers should include social justice provisions in their computer contracts to address worker health and safety and workers' rights, particularly in the end-of-life handling phase. As an environmental standard, EPEAT focuses on environmental attributes, and does not directly address social justice and worker protection issues. The Responsible Purchasing Network developed Social Justice Contract Clause recommendations for purchasers wishing to address these concerns. This clause should be used in conjunction with specifying EPEAT. See Addendum IV.

Province of Nova Scotia, Standing Offer for Desktops, 2007
The Province of Nova Scotia's February 2007 Desktop computers tender requires EPEAT Silver as a baseline, in addition to requiring other environmental performance attributes. *NOTE: This tender offer uses the term "certification" to refer to EPEAT – since EPEAT is a product declaration and verification system, not a certification program, the correct terms are "EPEAT- registered" and "EPEAT registration".* See Addendum III.

More Sample Specs

Federal
Federal Electronics Challenge Model Specification Language
Model specifications based on requiring EPEAT Silver registration for all products purchased on contract, and compelling suppliers to report on volume of products purchased at each EPEAT registration level.

National Aeronautics and Space Administration (NASA), Science and Engineering Workstation Procurement (SEWP) IV, 2006
(The Department of Justice, Department of Defense and Department of Commerce also use this contract language.)

> "All federal procurement officials are required by Executive Order 13101 and Federal Acquisition Regulation (FAR) to assess and give preference to those products and services that are environmentally preferable. Therefore all institutional purchasers who evaluate and select computer desktops, laptops, and monitors available and procured through this Contract should to the greatest extent possible meet the evolving standards associated with the Environmentally Preferable Purchasing Program (EPP) and the IEEE 1680 Standard for the Environmental Assessment of Personal Computer Products as described on the website (http://www.epeat.net)). The Contractor shall have the ability to respond to specific requests and

requirements centered on the EPP such as requests based on the Electronic Product Environment Assessment Tool (EPEAT) and identifying EPEAT registered products on their contract."

Department of Homeland Security, Information Technology Support Services RFP, 2005
Refer to section H.3: Hardware and Software Acquisition for the following:

"…The Contractor is advised that DHS is an active participant in the Federal Electronics Challenge. The Government reserves the right to require or otherwise provide preference on contractor solutions that include specific models of desktop computers, notebooks and monitors qualified through the Electronics Products Environmental Assessment Tool (EPEAT) or its successor. Specific requirements will be identified in Task Order Requests Packages."

State/Province
Commonwealth of Massachusetts, RFR ITC16a, 2004
In 2004, Massachusetts issued a Request for Response specifically establishing upcoming Energy Star and EPEAT certifications as the minimum standards for computers. This RFR will affect purchases until 2008.

Local
City of San Jose, California, 2006
Since the launch of the EPEAT system in July 2006, San Jose has required EPEAT resgistration for all relevant products. Refer to the following sections:

1.1   All Desktops and Monitors provided under this bid shall meet the U.S. Environmental Protection Agency (EPA) and Department of Energy ENERGY STAR Guidelines and have the ENERGY STAR label or certification by independent third party eco-labeling programs (i.e., TCO).

1.2 In accordance with recent EPA direction towards purchasing products that are registered on the Electronic Product Environmental Assessment Tool (EPEAT) which will be available in June 2006 and can be found at the www.epeat.net site, the City requires products comply at a minimum with all EPEAT criteria designated as "Required" or "Mandatory".

> 1.2.1 Bidders must confirm compliance to the minimum requirements specified in Attachment 10 - EPEAT Requirements by completing and submitting with bid.
> 1.2.2 Once the EPEAT becomes available, the Bidder must register the bid Desktop and Monitor products within thirty days.

Standards

EPEAT

In May 2006, the EPA funded the development of the Electronic Product Environmental Assessment Tool (EPEAT) as a voluntary standard for environmentally preferable computers (EPA, 2006c). The standard is independently managed and monitored by the Green Electronics Council. EPEAT addresses eight areas of environmental criteria (EPEAT, 2006a):

- ‣ Reduction/Elimination of Environmentally Sensitive Materials
- ‣ Material Selection
- ‣ Design for End of Life
- ‣ Product longevity/life cycle extension
- ‣ Energy Conservation
- ‣ End of Life Management
- ‣ Corporate Performance
- ‣ Packaging

EPEAT was developed to help purchasers evaluate, compare and select desktop computers, notebooks and monitors based on their environmental attributes (EPEAT, 2006a). The standard includes three tiers of environmental performance: Bronze, Silver and Gold. The complete set of performance criteria includes 51 criteria in the above eight categories -- 23 are mandatory minimum criteria and 28 are optional. To qualify for EPEAT Bronze, products must conform to the 23 mandatory criteria. Respectively, Silver and Gold qualification require at least 50% and at least 75% of the optional criteria be attained in addition to the 23 required criteria. The choice of optional criteria is left to the manufacturer, so purchasers may find Silver products that have focused on mercury reduction/elimination, or others which have strong achievements in recycled content and recyclability.

The most current Energy Star standard for energy efficient computers, administered by the US Environmental Protection Agency (EPA) and Department of Energy (DOE), is a required criterion in the EPEAT computer standard.

Social Justice Clause

In addition to specifying EPEAT-registered products, purchasers should set social justice standards through their computer contracts to address worker health and safety and workers' rights, particularly in the end-of-life handling phase. See the Specifications section for more information and Addendum IV for a copy of the Social Justice Clause developed by the Responsible Purchasing Network.

Basel Convention

The RPN Social Justice Clause references the Basel Convention. In order to protect developing countries from the dumping of hazardous and toxic waste from developed countries, the international community adopted an international treaty known as the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal in 1989 (Lipman, 2002). According to the Basel Secretariat, which administers the treaty, 170 countries are party to the treaty, though not all have ratified it (or formally adopted it). The Basel Convention requires a process of informed consent, where receiving countries are notified in advance and provide written consent to export of specific materials they deem hazardous (Lipman, 2002). It does prohibit the import of hazardous wastes to

countries where it is likely that the waste will not be managed in an environmentally sound manner. The United States has not ratified the Basel Convention.

Other Standards and Programs

US Green Building Council (USGBC)
Leadership in Energy and Environmental Design Green Building Rating System (LEED)
The USGBC awards buildings LEED certification at the Certified, Silver, Gold, and Platinum levels, based on the number of credits earned in a variety of categories.   All rating systems require at least two points earned in the "Optimize Energy Performance" credit in the Energy and Atmosphere category. Simple ways to earn points under this credit include using ENERGY STAR rated equipment, such as office electronics, computers, lamps, and HVAC systems.

Products

EPEAT Product Registry

There are over 700 EPEAT registered desktops, laptops, and monitors, from more than 20 manufacturers. Product listings in this database are updated periodically, as additional products are registered, and the overall numbers may change when Energy Star 4.0 requirement comes into effect in January 2008. Please check directly with EPEAT for the most recent list of products. (Last updated December 1, 2007)

Handy Facts

▸ Institutions are one of the largest consumers of computers, spending billions of dollars on electronic equipment each year.

▸ A purchasing cooperative of 15 western states, purchased $3.9 billion in computer equipment from 1999 to 2004.

▸ More than $50 billion in US Federal Government agency contracts currently cite the EPEAT standard. (EPEAT 2006b)

▸ The International Association of Electronics Recyclers projects that 1 billion computers will be scrapped worldwide by 2010, at a rate of 100 million units per year. (PSI, 2006).

▸ Computers and other office electronics consume 74 billion kWh of electricity per year, equivalent to the annual electricity consumption of 7 million households (PSI, 2003).

▸ As of December 2007, there were 711 EPEAT registered products (EPEAT, 2006).

▸ As of November 28, 2007, 673 different computers products, including desktops, laptops, workstations and integrated systems, have attained compliance with the new Energy Star 4.0 standard and 1215 monitors worldwide comply with the existing monitor standard. (ES 2007).

▸ The city of San Jose, California was the first city to include EPEAT in their requirements for computer procurement.

Definitions

Baseline	Basic information gathered before a program begins that is used later to provide a comparison for assessing program impact
Brominated flame retardants (BFRs)	Chemicals containing bromine atoms that are used in numerous products to reduce the risk of fire. These brominated compounds persist in the environment and increase up the food chain, and are associated in animal studies with endocrine disruption, neurobehavioral and developmental effects and immune suppression. See also polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs).
Cadmium	Heavy metal included in electronic equipment. Low level exposure is linked to kidney damage and cancer in humans.
End-of-life management	The process by which products are managed of after their term of useful service expires
Environmentally preferable	The quality of having have a lesser or reduced effect on human health and the environment when compared to other products and services that serve the same purpose.
Hexavalent chromium	Positive-6 valence chromium, considered a potential occupational carcinogen
Mercury	Heavy metal used in electronic equipment that can cause irreversible neurological damage to the developing fetus at low levels of exposure. Mercury exposure also causes short term and chronic nervous system impairment to exposed individuals
Polybrominated biphenyls (PBBs)	A class of flame retardant chemicals added to plastics that does not degrade readily in the environment; see also Brominated Flame Retardants.
Polybrominated diphenyl ethers (PBDEs)	A class of flame retardant chemicals added to plastics that does not degrade readily in the environment; see also Brominated Flame Retardants.
Polyvinyl chloride (PVC)	A plastic resin used in electronic devices. PVC is a polymer of vinyl chloride, which is a known carcinogen. When burned, chlorinated plastics like PVC may release dioxins.
Take-back	Policy whereby a manufacturer, distributor or recycler allows users to return products to them and takes responsibility for managing products at the end of their useful life
Toxic substance	A chemical or mixture that presents a risk of injury to human or animal health or the environment
Volatile organic compound (VOC)	Organic compound that typically vaporizes at room temperature and participates in atmospheric photochemical reactions

www.ResponsiblePurchasing.org

Endnotes

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Addendum I: Model Policy

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Model Environmentally Responsible Electronic Product Management Policy

[Organization] is committed to reducing the environmental impact of our electronic product purchasing, use and disposal. In order to do so, [Organization] will purchase environmentally preferable products, implement energy saving strategies during their use phase, extend their lifecycle wherever possible, and ensure that they are responsibly handled at end of life.

Specific strategies include:

1. **Purchasing**: All electronic products purchased by [Organization] are required to have achieved Bronze registration or higher under the Electronic Products Environmental Assessment Tool (EPEAT), where applicable to the product category. Additional consideration will be provided for electronic products that have achieved EPEAT Silver or Gold registration. The registration criteria and a list of all registered equipment are provided at www.epeat.net. In addition, purchasing processes will require demonstrated compliance with human rights and labor protections, and avoidance of the dumping of toxic materials in developing world.*

2. **Purchase Reporting:** To enable [Organization] to track the results of its purchasing preferences, all suppliers of EPEAT-registered electronic products will be required to provide regular reporting on number of products sold at each level of registration.

3. **Hardware Efficiency:** [Organization] will investigate and implement solutions – such as shared computers, central printers, thin client systems, or others -- that lead to reductions in the hardware used to accomplish specific organizational functions.

4. **Energy Management:** All available energy management methods will be implemented as appropriate, from automatic sleep modes and shutoff of equipment, to remote power management, to employee-accessible power strips and requirements to turn off all office equipment when not in use.

5. **Upgrades/ Lifecycle Extension:** Wherever feasible, [Organization] will prefer product upgrades, such as memory or processor speed improvements, over disposal and replacement of products in order to extend electronic products' lifecycle within the organization.

6. **Product Redeployment:** Upon the end of products' useful life in one setting, [Organization] will consider redeployment within the organization prior to disposing of

the equipment. [Organization/department] personnel will develop redeployment systems (web-based or other) that make the process of redeployment accessible and easy for end users.

7. **End of Life Management**: When equipment is no longer usable within the organization [Organization] will dispose of electronic assets in a responsible manner, with refurbishment and resale or donation, disassembly and reuse of

component parts, and complete recycling (not including waste to energy incineration) all included as end-of-life options. Any donation or recycling will be done in accordance with all applicable laws, and in a responsible manner as specified in Implementation Procedures developed by [Organization]. Asset tracking information by serial number will be provided to [Organization] for all equipment handled by any asset disposition contractor.

For contract language designed to protect workers rights and set limits on the export of toxic materials to the developing world, see RPN's model Social Justice Clause for purchasers – Addendum IV to the RPN Responsible Purchasing Guide for Computers

Because Every Purchase Matters

Addendum II: Model Specification

Green Electronics Council, EPEAT Recommended Contract Language, 2006
Includes reporting requirements which allow purchasers to quantify the benefit of their purchases. Because EPEAT requires Energy Star conformance, this language also addresses energy efficiency.

See attached for complete specification.

Addendum III: Model Specification

Province of Nova Scotia, Standing Offer for Desktops, 2007
The Province of Nova Scotia's February 2007 Desktop computers tender requires EPEAT Silver as a baseline, in addition to requiring other environmental performance attributes.
NOTE: This tender offer uses the term "certification" to refer to EPEAT – since EPEAT is a product declaration and verification system, not a certification program, the correct terms are "EPEAT- registered" and "EPEAT registration".

See attachment for complete specification.

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Social Justice Contract Clause for Purchasing Computers
For purchasers that wish to go beyond EPEAT in the areas
of the export of hazardous materials, worker health and safety, and workers' rights.

Background

The Electronic Product Environmental Assessment Tool (EPEAT) is a procurement tool to help purchasers identify environmentally preferable computers and electronics. EPEAT evaluates electronic products according to three tiers of environmental performance – Bronze, Silver, and Gold. The Responsible Purchasing Network (RPN), a project of New American Dream, was involved in the multi-stakeholder group that developed EPEAT and encourages purchasers to use EPEAT in their procurement of computers. For more information on EPEAT, including the performance criteria used to assess products, sample contract language, and a database of registered products, please see http://www.epeat.net.

In addition to specifying EPEAT-registered products, RPN recommends that purchasers include social justice provisions in their computers contracts. EPEAT, an environmental standard, contains some social justice measures but does not ban the export of hazardous waste to developing countries in accordance with the Basel Convention or directly address worker health and safety and workers' rights. We have developed a Social Justice Contract Clause for purchasers wishing to address these concerns. This clause is *not* intended to substitute EPEAT, but rather to be used in conjunction with it.

Social Justice Contract Clause[1]

1. Restrictions on the Export of Hazardous Materials

Criterion:
Manufacturers may not export or contract to export any hazardous materials deemed unacceptable by a given country's export/import agency or environmental agency. Only materials agreed upon by all relevant agencies will be exported to a given country.

Verification Requirement:

Upon request, manufacturers must produce proof of conformance with the Basel Convention[2] for each applicable country, such as a formal policy, letter from relevant agency, export/import permit, or other official documentation.

2. Worker Health and Safety

Criterion:

Manufacturers must ensure that their facilities and the facilities of their suppliers and contractors involved in manufacturing; assembly; processing disassembly; and recycling of products, product components, and recovered materials adhere to international norms of occupational health and safety. This applies to facilities in both the U.S. and abroad.

Verification Requirement:

Upon request, manufacturers must produce proof of a corporate program on occupational health and safety complying with the above criterion or evidence of OHSAS 18001 certification[3].

3. Workers' Rights

Criterion:

Manufacturers must ensure that their facilities and the facilities of their suppliers and contractors involved in manufacturing; assembly; processing disassembly; and recycling of products, product components, and recovered materials enable workers to take action to protect their own health. This may exclude the use of prison laborers who under federal law and some state and local laws do not receive full protections, rights, and remedies. This applies to facilities in both the U.S. and abroad.

Verification Requirement:

Upon request, manufacturers must produce proof of a corporate program on workers' rights complying with the above criterion or evidence of SA 8000 certification[4].

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[1] Purchasers reserve the right to enlist third parties to assist with the review of requested documentation.

[2] The Basel Convention and the Basel Ban Amendment provide a framework for the transboundary management and disposal of hazardous waste. More specifically, the Basel Ban Amendment prohibits the export of hazardous waste to countries that do not belong to the European Union, the Organization of Economic Cooperation and Development (OECD), or Liechtenstein. The convention can be viewed at http://www.basel.int/text/con-e.pdf and the amendment can be viewed at http://www.basel.int/pub/baselban.html.

[3] OHSAS 18001 (Occupational Health and Safety Assessment Series) is an internationally recognized standard for occupational health and safety management. It is compatible with ISO (International Standards Organization) 9001 (Quality) and ISO 14001 (Environment) management system standards.

[4] SA 8000 (Social Accountability) is an internationally recognized standard for social accountability. It is compatible with ISO (International Standards Organization) 9001 (Quality) and ISO 14001 (Environment) management system standards. The standard can be viewed at http://www.sa-intl.org.

Because Every Purchase Matters